

# ENERGY

## Types and Transfer

### Energy transfer

Energy can be changed from one form to another.

For example:

- Chemical energy in food is converted to thermal energy and kinetic energy by our bodies.
- Gravitational energy in a ball is converted to kinetic energy when it falls to the ground.



What other energy transfers can you think of?

- |   |  |
|---|--|
| 1. <b>Thermal (Heat)</b><br>Usually a by-product  | 6. <b>Kinetic</b><br>The energy of movement – related to mass                                |
| 2. <b>Light</b><br>What we can see!!  | 7. <b>Electrical</b><br>Movement of electrons (kinetic energy of electrons)                  |
| 3. <b>Sound</b><br>What we can hear!!   | 8. <b>Chemical Potential</b><br>Energy that can be released from chemical bonds              |
| 4. <b>Elastic Potential</b><br>Energy that can be converted from springs/rubber bands etc | 9. <b>Nuclear</b><br>Energy that is released from atoms changing from one element to another |
| 5. <b>Gravitational Potential</b><br>Energy that can be converted by the force of gravity |  |

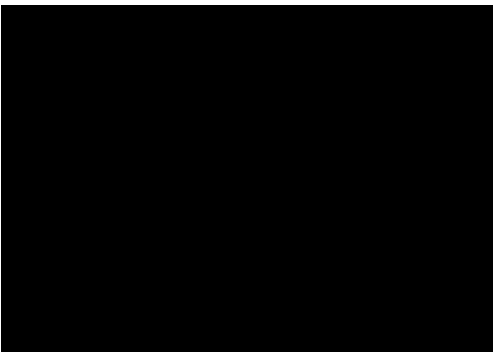
### What is the energy transfer?

What energy transfer takes place in each device?

- **burning match** chemical → heat and light
- **portable torch** chemical → heat and light
- **microphone** sound → electrical
- **radio** electrical → sound and heat
- **television** electrical → sound and light and heat
- **catapult** elastic → kinetic and heat
- **mobile phone** chemical → sound and microwaves (EM radiation) and heat
- **car** chemical → kinetic and sound and heat

In all these transfers the energy is not lost, it is conserved.

**Energy cannot be destroyed or created.**



<http://www.childrens.university.manchester.ac.uk/media/services/thechildrens.universityofmanchester/flash/whatisenergy.swf>



1. Explain the technology used in terms of energy.
2. What other technology does the TV coverage use for detecting outs in cricket?
3. What are the energy transfers involved in someone getting caught in a game of cricket? (work backwards – it might be easier)

1. What forces are applied to the Flic Flac?
2. Where does the energy come from for the Flic Flac?
3. What causes the Flic Flac to move?
4. Where does the energy go after the Flic Flac opens?
5. Draw the stages of the Flic Flac indicating the energy types
6. What variables could you change?
7. What could the effect of those changes be?

### Converting energy activity



What are the input and output energies of each object?

1



Input

Output

electrical

elastic

heat and light

kinetic and heat

chemical

sound

sound, kinetic, light and heat

sound, light and heat

?

gravitational

kinetic

electrical

kinetic, sound and heat



### Flic Flac Energy Transfers

Aim: To analyse the energy transfer in a flic flac

#### Materials:

Stiff Cardboard, Scissors, Tape, Elastic Band, Matches/Toothpick



#### Method:

1. Make a hole  $\frac{1}{2}$  way along one edge of the cardboard, 1 cm in from the side
2. Tape the edges opposite the holes together
3. Thread a elastic band through the holes and put the matchstick/toothpick through the loops
4. Tape the sticks to the cardboard
5. Bend the Flic Flac inside out (elastic band out) place on the desk, hold down with your finger. Make sure your (or your partner's) face is not in the way of the Flic Flac. Then release.